

REMARKS

Summary of the Office Action

Claims 1-5 and 8-11 are rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,292,688 to Hsiao et al. ("Hsiao") in view of U.S. Patent No. 5,828,126 to Thomas, or U.S. Patent No. 5,468,999 Lin et al. ("Lin"), or U.S. Patent No. 6,324,067 to Nishiyama.

Claims 1-5 and 8-11 are rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,589,714 to Howard in view of Thomas, or Lin, or Nishiyama.

Claims 1-5 and 8-11 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of Application No. 10/026,928, now U.S. Patent No. 6,586,827.

The drawings are objected to.

Summary of the Response to the Office Action

Applicants have amended claims 1 and 9.

Applicants have canceled claim 8 without prejudice or disclaimer.

Applicants submit concurrently herewith a Submission of Replacement Sheets of Drawings.

Claims 1-5 and 9-11 are pending.

All Claims Define Allowable Subject Matter

Claims 1-5 and 8-11 are rejected under 35 U.S.C. § 103 as being unpatentable over Hsiao in view of Thomas, or Lin, or Nishiyama. Applicants have canceled claim 8 without prejudice or

disclaimer, rendering the rejections of claim 8 moot. The rejections under 35 U.S.C. § 103, of claims 1-5 and 9-11 are respectfully traversed. Applicants have amended claim 1. Claim 1 recites a wiring board including a core substrate defining an opening, an embedding resin having a dielectric constant of less than or equal to about 5 and $\tan\delta$ of less than or equal to about 0.08, an electronic component embedded by the embedding resin in the opening, and a substrate in which a build-up layer is formed by laminating an insulating and a wiring layer in alternate fashion. The substrate in which the build-up layer is formed, is disposed across the opening and in contiguous contact with the core substrate and the embedding resin. The electronic component includes an electrode such that a distance from the electrode to the wiring layer of the substrate in which the build-up layer is formed is less than or equal to 100 μm . Support for these features is provided at, for example, Figs. 1-9 and paragraphs 0069 and 0086 – 0091, of Applicants' specification as originally filed.

At page 4, paragraph 3, the Office Action asserts "[r]egarding to the distance between the wiring layer and the electrode, since applicant has not shown any advantages of such distance or such distance is for any particular reason. The Examiner takes the position that the electrode and the wiring layer gap space under 30 μm is obvious." Applicants submit that the claimed distance between the electronic component electrode and the wiring layer of the substrate in which the build-up layer is formed is not obvious because the claimed distance has advantages and is for a particular reason. Specifically, as described at paragraph 0069 of Applicants' specification, the height of the electronic component and the thickness of the insulating substrate are determined such that the distance between the surface of a terminal electrode of the electronic component and a wiring layer of the substrate in which the build-up layer is formed is less than or equal to about 100 μm , preferably less than or equal to about 50 μm , and more preferably less

than or equal to about 30 μm . This is because when the distance between the electronic component and the build-up layer formed on the insulating substrate is reduced to the smallest amount attainable, generation of unwanted parasitic capacitance (*e.g.* inductance) can be prevented. It is submitted that neither Hsiao, Thomas, Lin, nor Nishiyama, considered alone or in combination, teach or suggest an electronic component including an electrode such that a distance from the electrode to a wiring layer of the substrate in which the build-up layer formed is less than or equal to 100 μm , as recited in claim 1.

Moreover, it is submitted that Thomas does not teach or suggest a “substrate in which the build-up layer is formed is disposed across the opening and in contiguous contact with the core substrate and the embedding resin” as recited in claim 1, because member 34 of Thomas is merely a cover made of ceramic, plastic, or epoxy. (see col. 6, ll. 35-37 of Thomas).

Claims 1-5 and 8-11 are rejected under 35 U.S.C. § 103 as being unpatentable over Howard in view of Thomas, or Lin, or Nishiyama. Applicants have canceled claim 8 without prejudice or disclaimer, rendering the rejections of claim 8 moot. The rejections under 35 U.S.C. § 103, of claims 1-5 and 9-11, are respectfully traversed. Applicants have amended claim 1 as described above. It is submitted that neither Howard, Thomas, Lin, nor Nishiyama, considered alone or in combination, teach or suggest an electronic component including an electrode such that a distance from the electrode to a wiring layer of the substrate in which the build-up layer formed is less than or equal to 100 μm , as recited in claim 1.

Moreover, it is submitted that Howard does not teach or suggest an embedding resin having a dielectric constant of less than or equal to about 5, as recited in claim 1. As described at col. 4, ll. 38-40, the resin of Howard has a dielectric constant of no more than about 10. However, as described at col. 7, ll. 13, the resin of Howard includes 22.64 parts by weight of

carbon black. According to paragraph 0048 of Applicants' specification, when the incorporation amount of carbon black exceeds about 1.4 mass %, the dielectric properties of the embedding resin drastically deteriorate. Specifically, the dielectric constant of the resin exceeds about 5. So it appears that Howard teaches a resin having a dielectric constant of more than 5 and no more than 10. Therefore, Howard does not teach or suggest an embedding resin having a dielectric constant of less than or equal to about 5, as recited in claim 1.

Claims 2-5 and 9-11 ultimately depend from claim 1, and recite the same combination of allowable features recited in claim 1, as well as additional features that further distinguish over the applied art. For at least the above described reasons, Applicants request that the rejections under 35 U.S.C. § 103, of claims 1-5 and 9-11, be withdrawn.

Claims 1-5 and 9-11 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of U.S. Patent No. 6,586,827. While Applicants do not acquiesce in the rejection, Applicants submit concurrently herewith a Terminal Disclaimer demonstrating common ownership of the present application and U.S. Patent No. 6,586,827 to facilitate allowance of the present application, thereby obviating the double patenting rejection. Accordingly, Applicants respectfully request that the rejection under the judicially created doctrine of obviousness-type double patenting be withdrawn.

The drawings are objected to because the black ink is allegedly too dark in some of the drawings. Applicants submit concurrently herewith a Submission of Replacement Sheets of Drawings to address the Examiner's concern. Applicants submit that no new matter is added in the replacement drawing sheets. Withdrawal of the objection to the drawings is requested.

Applicants submit that all pending claims, *i.e.* claims 1-5 and 9-11, are in condition for allowance. Allowance of all pending claims is earnestly solicited.

CONCLUSION

Applicants respectfully request that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing all pending claims in condition for allowance. Applicants submit that the claim amendments do not raise new issues or necessitate additional search of the art by the Examiner.

Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite the prosecution.


If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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